

REMARKS

The applicant gratefully acknowledges the Examiner's indication that though claims 5-7, 12, 13 and 19-25 are objected to as being dependent upon a rejected base claim, they would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Since the applicant believes the base claim of these claims to be allowable, as further expounded herein, the applicant respectfully asserts that the amendment of claims 5-7, 12, 13 and 19-25 proposed by the Examiner is unnecessary.

The present response is intended to be fully responsive to all points of final rejection raised by the Examiner, and is believed to place the application in condition for allowance. Furthermore, the applicant submits that the amendments made are of a minor nature, involving only incorporation of a limitation from dependent claims into their independent base claim, such that a new search should not be regarded as necessary. For these reasons, the applicant therefore earnestly requests entry of this amendment, and favorable reconsideration and allowance of the application.

Claim Objections

Claim 4 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim, it being dependent on claim 2 that is canceled. The applicant has cancelled claim 4 without prejudice, thus rendering moot the Examiner's assertion

Claims 3, 8, and 16 are objected to as reciting a limitation "at least one phase changing element" which had been amended in claim 1 to "at least one pixelated phase changing element". Claims 3 and 8 have been cancelled without prejudice, thus rendering moot the Examiner's assertion regarding them. Claim 16, and the other relevant claims dependent on claim 1, have been amended to be consistent with the language of claim 1. The Examiner's objection regarding these claims is thus overcome.

The applicant therefore respectfully submits, in view of the above arguments, that amended independent claim 1 is not anticipated by Wang et al, and respectfully requests withdrawal of the rejection under 35 U.S.C. 102(a). The applicant further respectfully submits that similar arguments apply to counter the examiner's rejection under 35 U.S.C. 102(a) of independent claim 26, which has been amended in a manner similar to the amendment made to claim 1.

Claims 8, 11, 14-17 depend from claim 1, which is deemed allowable, and recite additional patentable subject matter. Claims 8, 11, 14-17 are therefore also deemed allowable.

Claim Rejections - 35 USC § 103

The Examiner has rejected claims 18, 39 and 40 under 35 U.S.C. 103(a) as being unpatentable over Wang et al (U.S. Patent 6,175,667 B1). The Examiner states that:

Regarding claim 18, as described above Wang et al disclose the claimed invention except the electrode that is located remotely from the pixel...

Regarding claim 39, as described above Wang et al disclose the claimed invention except a detector element and a drive circuitry for controlling the phase change..

Regarding claim 40, as described above Wang et al disclose the claimed invention except a plurality of input and output fibers...

The applicant respectfully submits that the Examiner's assertions, that Wang et al disclose the claimed invention except for the specific elements mentioned with regard to each claim rejected, is incorrect when applied to amended claims 18, 39 and 40, respectively, all of which recite a pixelated liquid crystal phase changing element, which is not to be found in Wang et al.

Consequently, the applicant submits that currently amended claims 18, 39 and 40 cannot be rendered obvious by Wang et al, nor by Wang et al in combination with any other prior art.

Furthermore, in the background section of Wang et al, in col. 1, lines 49-59, Wang et al, describe a prior art liquid crystal switch/attenuator of a different type to that of the Wang et al device, using two birefringent polarizers. Thus, in spite of the use of liquid crystals in prior art switches/attenuators, Wang et al, use other materials, such as an electro-optical phase retarder material. Wang et al, thus actually teach away from the use of liquid crystals as a phase changing material in such electro-optical devices.

Furthermore, the failure of Wang et al, to use liquid crystal materials results in a device having a number of disadvantages over a similar device using liquid crystals, as acknowledged in Wang et al itself, and as summarized in the background section of the present application in paragraph [0008].

This thus reinforces the applicant's submission that none of the claims of the present application can be rendered obvious by Wang et al, nor by Wang et al in combination with any other reference.

In addition, claims 3, 4, and 44-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al (U.S. Patent 6,175,667 BI) and further in view of Dupont et al (U.S. Patent 5,907,645). The Examiner states that:

Wang et al disclose the claimed invention except at least one phase changing element being at least one liquid crystal element. Dupont et al teach that liquid crystal modulation (due to rotation of an optical axis) are advantageous due to the fact that substantial electro-optical effects are obtained under a weak electrical field, and at low cost (see column 1 lines 61-66). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use a liquid crystal element in Wang et al as taught by Dupont et al to reduce the cost.

As argued above, since the possibility of the use of a liquid crystal element in optical attenuators/switches was known at the time of the Wang et al application, and yet Wang et al did not make use of such an element, no combination of Wang et al, with any other prior art can render as obvious such use, as currently claimed.

Referring now to the specific claims rejected by the examiner under 35 U.S.C. 1.03(a), claims 3, 4, and 46 have been cancelled without prejudice, such that the Examiner's rejection thereof under these grounds is moot. Furthermore, the applicant submits that claims 44-45 cannot be rendered obvious by Wang et al in light of Dupont et al for the above-stated reasons.

Conclusion

The applicant therefore respectfully submits that in the light of the arguments mentioned above, the amended, previously presented and originally filed claims currently on file are all novel and unobvious over the prior art cited by the Examiner, recite patentable material, and are therefore all deemed to be allowable. Entry of this amendment, favorable reconsideration and prompt allowance of this application are therefore respectfully requested.

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Respectfully submitted,

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